WHAT IS CLAIMED IS:

1. A method for ordering data transferred over multiple channels, comprising:

generating a data packet in response to a flow control credit;

generating a sequence number;

inserting the sequence number into the data packet;

selecting one of a plurality of channels to transfer the data packet;

transferring the data packet over the selected one of the plurality of channels.

2. The method of Claim 1, further comprising:

incrementing the sequence number in response to transfer of the data packet.

3. The method of Claim 1, further comprising:

decrementing a number of flow control credits in response to transfer of the data packet.

4. The method of Claim 3, further comprising:

receiving a reply, the reply including a flow control credit;

incrementing a number of flow control credits in response to receipt of the reply.

5. The method of Claim 1, further comprising:

resetting the sequence number to an initial value.

6. A system for ordering data transferred over multiple channels, comprising:

a sequence number unit operable to generate a sequence number;

a request channel controller operable to receive a data packet in response to a flow control credit, the request channel controller operable to insert the sequence number into the data packet, the request channel controller operable to select one of a plurality of request channels, the request channel controller operable to transfer the data packet over the selected one of the plurality of request channels.

7. The system of Claim 6, wherein the request channel controller is operable to generate an increment signal, the sequence number unit operable to advance the sequence number in response to the increment signal.

8. The system of Claim 6, further comprising:

a credit counter unit operable to maintain a number of flow control credits.

9. The system of Claim 8, wherein the request channel controller is operable to generate a decrement signal, the credit counter unit operable to reduce the number of flow control credits in response to the decrement signal.

10. The system of Claim 8, wherein the credit counter unit is operable to increment the number of flow control credits in response to receipt of a reply including a flow control credit.

11. A method for ordering data transferred over multiple channels, comprising:

receiving a plurality of data packets, each data packet including a sequence number, the plurality of packets being received in a non-sequential order;

storing each of the plurality of data packets in a buffer according to its sequence number;

reading the plurality of data packets in sequential order from the buffer according to the sequence numbers;

generating a flow control credit in response to each of the plurality of data packets being read from the buffer.

12. The method of Claim 11, further comprising:

setting a valid bit in response to a data packet being stored in a portion of the buffer associated with the valid bit.

13. The method of Claim 12, further comprising:

reading a data packet from the buffer in response to the valid bit;

clearing the valid bit in response to a data packet being read from the associated portion of the buffer.

14. The method of Claim 11, wherein the sequence number is used to directly index into the buffer.

15. A system for ordering data transferred over multiple channels, comprising:

a write port controller operable to receive a plurality of data packets in a non-sequential order, each data packet including a sequence number;

a re-order buffer operable to store the plurality of data packets, the write port controller operable to place each data packet into the re-order buffer in response to its sequence number;

a valid bit unit operable to generate a valid bit for each portion of the re-order buffer, the valid bit unit operable to set a valid bit for a corresponding portion of the re-order buffer in response to a data packet being stored therein;

a read port controller operable to provide data packets in a sequential order in response to a valid bit being set.

16. The system of Claim 15, wherein the read port controller is operable to generate a flow control credit in response to providing a data packet from the re-order buffer.

17. The system of Claim 15, wherein the read port controller is operable to clear the valid bit upon providing a data packet from the re-order buffer.

18. The system of Claim 15, wherein the write port controller uses the sequence numbers to directly index the re-order buffer.